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SCIENCE, TECHNOLOGY AND INNOVATION POLICY REVIEWS

Implementation of the programme on science, technology and innovation policy reviews

Note by the UNCTAD secretariat

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Background

1. The Economic and Social Council, at its regular session of July 1995, requested the CSTD to liaise with UNCTAD in establishing a programme of country reviews on science, technology and innovation policy (STIP) for interested countries (ECOSOC resolution of 19 July 1995, Science and Technology for Development, E/RS/1995/4). UNTCAD's role on this review exercise was confirmed at UNCTAD IX, in May 1995. [1]

2. The first *science, technology and innovation policy country review (STIP review)* was initiated at the request of the Colombian Government in 1995. Since that time, several other developing countries and countries in transition have also expressed an interest in undertaking this review exercise. At present, their requests are under consideration pending availability of resources.

3. The purpose of science, technology and innovation policy reviews is to enable participating countries to evaluate the efficiency with which their scientific and technological, as well as industrial, economic, educational and social institutions and mechanisms contribute to the development -- particularly technological development -- of their enterprises. By enriching the knowledge of how these policies are designed and applied, the reviews will also help other developing countries and countries in transition to improve their own policies, while at the same time opening up opportunities for greater international cooperation.

4. The focus of the STIP review is on the interrelationships among the various institutions and players in the system of innovation of the participating country, and particularly on the distribution of knowledge to all the various national agents aimed at increasing the knowledge base of the entire society. Every STIP review, like every country, is different and has to be tailored to the specific needs of the participating countries. Although initially based on the OECD Science, Technology and Innovation, (STI) Reviews, at least from a procedural perspective, the UNCTAD STIP reviews have been adapted to the needs and characteristics of the developing countries and countries in transition.

5. One of the novel features of these reviews is that the national counterparts are called upon to prepare an extensive background report describing and analysing the operation of their countries' STIP policies and institutions prior to the review procedure, for which the country bears the cost. This ensures that its policy and decision-makers do not simply become passive recipients of a technical assistance mission report but rather that they become actively and critically engaged in the exercise, in inter-action with an international teams of experts which prepares its written assessment based on the background report and on its own on-site investigation. A related feature which helps to maximize the impact of the

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[1] See Globalization and Liberalization: Development in the Face of Two Powerful Currents, report by the Secretary-General of UNCTAD to the ninth session of the Conference (TD/366/Rev.1), para. 326.

review is that the government representatives, the business community and other relevant participants in the STIP system have an opportunity to meet with the international review teams after the preparation of the latters' draft report in order to discuss its main findings and recommendations and put forward their own views.

Objectives of the STIP Reviews

6. The STIP Review is intended to facilitate effective integration of science and technology policies with development planning through, *inter alia*, establishing constructive dialogue between different agencies responsible for technology, investment, agriculture, trade, education and related issues with a view to building up and strengthening of local technological capabilities and resources. In examining such issues, the STIP review aims at the following:

(a) Improving the policy-making capacity of public R&D institutions in charge of science and technology;

(b) Enhancing the policy-making capability of governments with respect to innovation and assessing its relevance to the broader development strategy; and

(c) Strengthening the technological infrastructure.

7. The STIP review will enable the innovation perspective to affect other development policies by addressing selected aspects of development-related policies such as investment, trade, industrial, fiscal and education policies that influence the climate for innovation.

8. The nature and character of science and technology policies in developing countries and economies in transition has changed throughout the last decade from being static and exogenous to being dynamic and endogenous to the system within which it operates. There has been a fundamental shift in the understanding of technical change, in which policy counts. Explicit innovation policies are largely governed by nation States, even if the policies, institutions and behaviour which influence the innovative process are complex and often defy national boarders. A broad consensus has emerged on the salience of the concept of **national system of innovation (NSI)** that encompasses a more dynamic approach not only to the generation of new knowledge but to its access and diffusion among the many separate, but inter-related, parts of the innovation system.

The spirit of STIP reviews

9. Acquisition of international competitiveness has been a long-standing preoccupation of developing economies and development economics. Recently, it has been suggested that innovation-based competitiveness, at the level of the enterprise, will yield more long-term sustainable competitiveness than traditional cost-based competitiveness. While the traditional approach to competitiveness discounts the external economies associated with innovation, the more recent evolutionary - neo-institutionalist school proposes innovation and technical change at the firm level as a key

determinant of international competitiveness in addition to the ability to compete in delivery on the basis of prior investments. It is difficult to deny that innovation is increasingly playing an important role in both advanced as well as developing countries in creating and sustaining competitiveness.

10. Competitiveness in turn, is defined as the outcome of a continuous process of innovation that enables firms to catch up and to keep up as a technology and the mode of competition change, The concept of innovation in the developing countries requires a rather broad interpretation, one which encompasses the processes by which firms master and apply product designs and manufacturing processes that are new to them, or even to the nation if not to the world. This definition includes **incremental** as well as radical or generic innovations, but tends to focus on the former. **Innovation** thus becomes a process wherein individuals and organizations take new initiatives which exploit the knowledge-base of their economy. As this definition of innovation is broad enough to encompass all changes in knowledge which contribute to enhanced productiviy of resources, it is in fact identified with productivity growth in general.

11. Innovation represents the commercial application of new knowledge or the combination of old knowledge in radically novel ways. Such activity, while disrupting existing economic routines -- and the associated firms, practices and factors of production -- will improve the competitive position of the firm or the broader productive unit in which it is introduced by creating new markets, advancing the technological regime or establishing new linkages between product producers (suppliers) and users. As such, innovation is a permanent feature of economic development. Innovation has also been defined as the process by which firms master and implement the design and production of goods and services that are new to them, irrespective of whether or not they are new to their competitors -- domestic or foreign.

The mechanics of a STIP Review

12. In general, the review proceeds in the following way. Upon invitation from the responsible authorities, the UNCTAD secretariat carries out a brief programming mission in the participating country and jointly, with the local authorities, designs the content and the guidelines of the country's background report. The novel feature of this strategy is that it involves a more active and participating role of the national counterparts, namely of the key players in the NSI system of the participating countries. Following the completion of the background report by the national authorities, a small team of international experts including a CSTD member, chosen jointly with the participating country and working with the secretariat, carries out an independent evaluation of the country's STI conditions and policies. Subsequently, the international review teams will prepare a brief evaluation report, with the secretariat acting as a rapporteur, containing their own assessment of the STI system in the country and suggest appropriate policy options. In order to bring the policy review to the attention of the local community in the country, a further **Round Table** meeting is held again in the country itself between the international experts including a CSTD member, the secretariat and the key local players in the science, technology and innovation system. The

background report as well as the review team's report and a summary account of this meeting will be compiled and edited by the secretariat for publication in a single volume, to be published by the United Nations.

13. To ensure that this exercise contributes meaningfully to the strengthening of policy-making capabilities more generally, the participating countries are encouraged to form a consultative committee composed of relevant executing agencies attached to the project and to prepare a schedule of follow-up meetings to mobilize support for the implementation of recommendations emerging from the review process. One year following completion of its STIP review, each country concerned is requested to prepare a report on activities it has undertaken to implement the recommendations. Once a cluster of countries with similar attributes has undergone the review process, they could convene a regional conference to exchange their experiences. In other words, the country report is not an end in itself but an interactive process between the S&T institutions, economics agents and other entities' efforts to make the STIP review an efficient and viable tool for development.

14. The STIP review exercise is aimed at assisting participating countries to identify the strengths, and more importantly the weaknesses of their innovation process and to evaluate and strengthen the contribution of science and technology policies and institutions to the development of their productive sectors and to elicit support from the international community in these efforts.

STIP in Colombia

15. The review in Colombia is the first Science, Technology and Innovation Policy (STIP) review to be undertaken by CSTD and UNCTAD. It was initiated in Geneva, in May 1995 (during the last session of CSTD), at which time a request for the STIP Review was made by the Colombian Government. So far, two review missions have taken place in Colombia (the programming mission and the Evaluation mission) and the final Round Table is scheduled to take place in early March, 1997 in Bogotà, Colombia). At this Round Table meeting, the international experts will present conclusions and recommendations to the local innovation community in Colombia, at which time there will be ample opportunity for inter-action and discussion among the multiplicity of actors involved in the process. Consequent to this Round Table, the final report will be edited and published by the United Nations and presented, in draft form, to the CSTD at its sixth session in Geneva (May 1997).

STIP - Jamaica

16. The second STIP review, undertaken by UNCTAD and the CSTD, was initiated in December 1996, through a Programming Mission in Jamaica. The Programming Mission, of one week's duration in Kingston, (2-6 December 1996) was a preliminary information and data gathering mission. It consisted of meetings, interviews and presentations, including with Mr. P.J. Patterson, the Prime Minister of Jamaica, other Ministers and high-level government officials, as a well as prominent members of Jamaica's business, research, media and academic community and other key players in

Jamaica's **national system of innovation (NSI)**. The Jamaican Government is currently in the process of designing its national innovation policy and considers that the STIP review could provide an important input into this process.

17. As in the Colombian review, the aim of the programming mission was to agree jointly with the Jamaican authorities the outline, content and terms of reference of the background report on the Jamaican national system of innovation which will be prepared by the Jamaicans themselves in the course of the next six months.

18. With respect to the timing of the next step in the review process, i.e. the evaluation mission to Jamaica, it was agreed with the Jamaican officials that this mission should take place in the last two weeks of June 1997, at which time at least three international experts, along with the UNCTAD secretariat and a member of the CSTD, will return to Jamaica for the purpose of evaluating the effectiveness of Jamaica's national system of innovation. On the basis of on the background information to be provided by the Jamaicans, the experts will then assess the effectiveness of the interactions and flows between the formal S&T institutions and the productive sector and make recommendations as to their improvement and increased efficacy.

19. Subject to availability of resources, a third STIP Review will be initiated in Ethiopia in the near future.